Chapter 3
Migrants' Mental Maps: Unpacking Inhabitants' Practical Knowledges in Lisbon

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Every story is a travel story – a spatial practice.
Michel de Certeau, The Practice of Everyday Life

3.1 Introduction

A common consequence of sticking to a research topic for a fair amount of time is that it starts colonising your everyday life to a point where you may find yourself asking questions to every new acquaintance as if they were participants in your project. Your friends may become tired of your constant interrogations, but unknown people might simply take you as someone with a peculiar sense of curiosity. I believe this is what recently happened to me when coming back from a conference and decided to call an Uber driver at Lisbon airport.

The driver who picked me up quickly noticed my Brazilian accent (my accent from São Paulo, to be more precise) and told me we were compatriots. He was also from São Paulo and had come to Lisbon some 6 months before that ride. Because we were both Brazilians, he said, he felt comfortable to tell me certain things, like the fact that he did not have a legal immigration status at the time. He then told me how difficult it was for him to get a Portuguese fiscal number:

> 'You cannot simply go to any random *Finanças* (the tax office); some of the offices ask you to bring two Portuguese persons to testify you live here; some do not accept an informal rent contract as proof of address; I don't have a contract and I don't know anyone here. At some *Finanças* offices, they don't require any of that. You see, you really have to know where to go; they (tax offices) are not all alike'.

And he went on telling me (I might have asked a couple of questions in that direction) about registering at the local health centre, choosing a neighbourhood for him

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and his wife ("I had to look for a nicer place with nicer surroundings when she joined me from Brazil"), but also about places to go for cheap Brazilian food. Our conversation was interrupted due to a brief loss of signal in the GPS app, the tool he uses to navigate the city, and he had to restart the device. "When the app crashes I can't go anywhere; I don't know how to get around here. The other day, when the app wouldn't work, I had simply to stop the car, apologize to the customer and wait".

It struck me how he managed to know so much about the practicalities of living in Lisbon as an immigrant in so little time. His Lisbon was flagged with the resources and spatial strategies he resorts to in order to carry a life here. Knowing *where-to*, *how-to* and *what-for* is what furnishes a partially unknown territory with the functionalities that allow one to *work* a city. He did obtain a fiscal number and he did find suitable accommodation for himself and his wife. It wasn't easy, he argued, but he did it. And yet, it seemed natural for him to state he did not know the city without the app, that he would be lost without it. This paradox makes us ask what is it, after all, to know a city?

The driver's story encapsulates two ways of knowing a city. One, which has to do with a city's form, its streets and names, the kind of knowledge that the GPS device shows the driver. A cartographical city, a city of trajectories, of beginnings and ends, of routes. A second sort of knowledge pertains rather to a city's resources, its content, what it serves for. A city of places, of activities, of utilities and potency. These two ways of knowing are not mutually exclusive; on the contrary, they are deeply interrelated. Nevertheless, they differ in terms of legitimacy. Cartographic knowledge, the bird's eye perspective over the city, is assumed to be truth, real knowledge, so much so that the driver refers to that perspective when states not to know Lisbon. His personal expertise about the city, its resources and how to use them, would not count as knowledge.

This chapter unpacks these two ways of knowing a city by looking at mental maps drawn by migrants in Lisbon, Portugal. As a research method, mental maps are not particularly new (Lynch, 1960); they have been widely used in migration research as a way to understand migrants' spatialities: from the formation of a sense of place to the geographies of urban segregation (Pezzoni, 2013); from depicting spaces of belonging to showing spaces of exclusion (Silva & Fonseca, 2018). Rather than presenting a history of the ways mental maps have been utilised in social scientific scholarship (for that see Gieseking, 2013), this chapter explores mental maps as a method for grasping migrants' integration to urban space. I argue that mental maps are a fundamental research tool for exposing under-researched qualities of migrants' relationships with new urban territories while acknowledging their active role as urban inhabitants in mobilising cities' resources. The chapter ends by making a case for the researcher-participant interactive capacity mental maps offer, and discusses some of the method's specific potentialities.

3.2 Working with Mental Maps in Urban Contexts

Mental maps are usually produced as freehand drawn images outlining (but not limited to) spatial elements as they are experienced and imagined by individuals. Often called "cognitive maps", these graphic images have served various purposes in social scientific scholarship. Researchers have asked participants to produce mental maps in order to understand identity formation, spatial awareness, orientation and navigation, social perception of boundaries, emotional and border geographies, spatial justice, confidence, feelings of urban unsafety, etc. Research participants, thus, can be given more or less precise instructions on what to represent on the map: their everyday itineraries across the city, the spaces where they feel secure, the places where they have had negative experiences (discrimination, racism or sexual assault, for instance); they may be asked to draw such graphic elements on a blank sheet of paper or on a pre-formatted cartographical map. They may also be asked to label, make a legend or to colour an already existing map.

Mental maps have the capacity of making visible traits of "the movements of people as they come and go between places (wayfinding)" through "the re-enactment of those movements in inscriptive gesture (mapping)" (Ingold, 2000, p. 234). In this sense, they work as biographic devices (Harley, 1987), displaying personal histories of human-space interaction. Like other personal accounts, mental maps do not exhaust participants' knowledge of a place (Kitchin & Freundschuh, 2000); therefore parameters such as "completeness" or "perfection" are usually avoided altogether. Mental maps bring up vernacular information and embodied everyday perceptions, and thus raise the question of whose knowledge and of what kind of knowledge is taken into account (Wright, 1947, p. 2). This discussion has been taken forward by critical counter-cartography (Counter Cartographies Collective; Dalton & Mason-Deese, 2012; kollektiv orangotango+, 2018), calling into question the monopoly of traditional cartographical knowledge and re-working its tools for community-building practices, social movements' strategies, or simply to reveal invisible/invisibilised spatial understandings of neighbours, minorities, and migrants.

The critique of positivist cartography (Crampton & Krygier, 2005) has also paved the way for unconventional modes of map-making. This renewed interest for the map form and the knowledge possibilities it enables spilled over to other social sciences and to art. Solnit's series of atlases, for example, proposes to excavate the many layers that make up cities like San Francisco, New Orleans and New York, from the perspective of its inhabitants, artists, community leaders, etc. (Solnit, 2010; Solnit & Jelly-Schapiro, 2016; Solnit & Snedeker, 2013). The spatial turn in art has also examined the relationship between map-making and artistic practice. According to Cosgrove (2005, p. 36), "not only have the critical interpretative and iconographic methods of art history been widely applied to maps, but interest among contemporary artists in mapping themes has significantly increased". In this context, pre-modern maps and mental maps have particularly drawn attention due to their creative, decorative and personal imprints. Artists themselves have joined

forces with social scientists and migrants in order to explore the possibilities offered by mental maps (Mekdjian, 2015).

Within academic literature, mental maps vary not only as to the themes they are expected to address, but also in terms of how researchers deal with them. This has to do with their "methodological stretch", that is, to their reach as research tools and to the ways they may be operationalised. Take, for instance, Ramadier's study (2009) regarding foreigners' social representation of space. In his study, Ramadier looked at how international students represented the city of Paris in order to introduce the notion of "environmental cultural capital". Students were asked to draw a mental map of Paris and pinpoint the urban elements they considered most relevant. Six elements were chosen for each map and their topological precision was measured and scored, by contrast to an official map of Paris. A final mark was attributed to each map, based on which Ramadier distinguished two forms of "environmental capital" acquisition, one embodied (through early familiarity with Parisian-like urbanism) and one acquired (through their need to use the city for different purposes).

By juxtaposing participants' drawings with an official cartographic map and judging them based on their precision and accuracy, Ramadier implicitly assumes that there is a straightforward relation between spatial experience and the act of representation contained in the mental maps participants have produced. As Tuan (1977, p. 68) has noted, "people who are good at finding their way in the city may be poor at giving street directions to the lost". Rather than the multifaceted city-inhabitant relationship, what Ramadier measured was actually participants' drawing skills and familiarity with cartographical codes. To this particular usage of mental maps, Cosgrove (1999, p. 7) argued that

> 'cognitive mapping' means much more today than was conceived by its 1960s investigators, who took for granted the existence of an objectively mappable and mapped space against which their 'mental maps' could be compared. Not only is all mapping 'cognitive' in the broadest sense, inescapably bound within discursive frameworks that are historically and culturally specific, but all mapping involves sets of choices, omissions, uncertainties and intentions – authorship – at once critical to, yet obscured within, its final product, the map itself.

Embracing the authorial nature of maps, Pezzoni (2013, 2016), on a different note, worked with transit migrants' cognitive maps in order to understand the specificities of their needs and rapport to the city of Milan, Italy. She was interested in the extent to which transitory populations could "offer a representation of the city from a mobile point of view, due to a housing condition marked by instability" (2016, p. 94). Her findings suggest that the

> stratification of the city that emerges from these scattered points (the key urban resources identified by migrants) is unknown to those who are permanent residents, but neither is it evident to those who are looking for the services, as these services constitute a set of places to be discovered, place by place, always starting a new search from scratch (2016, p. 106).

Pezzoni argues that the data gathered through mental maps could originate a "first arrival map", potentially adopted by public services, where key urban equipment

would be displayed for those to whom the city is still unfamiliar. These maps may function as elements for evaluating and planning the access to basic and urgent resources necessary for individuals settling in Milan. The data they contain shed light on patterns of urban segregation, racism and exclusion, or of hospitality and accessibility, and may help reform and conduct public policies that are more comprehensive, inclusive, and attentive to the needs of those who would benefit from them.

Methodologically, Pezzoni proceeded as to transpose and adapt Lynch's (1960) mental map categories (paths, boundaries, living spaces, nodes, and landmarks) for the study of transitory inhabitants, and classified accordingly the spatial elements portrayed by research participants. Differently from Ramadier (2009), Pezzoni's understanding of mental maps had nothing to do with accuracy and cartographical precision. Her study aimed at recognising a constellation of spatial elements deemed relevant for a transitory population and, therefore, a formal analysis of mental maps' elements was sufficient.

In contrast, some scholars believe that mental maps should rather be used in combination with other research methods. Kochan's (2016) exploration of migrants' spatialities in Chinese cities is a good example. Kochan examined the urban lives of internal migrants in Beijing and Shenzhen through a multi-method qualitative approach combining mental maps, walking interviews and participants' self-photography. He insists that "by using multiple methods, we are better equipped to look for alternative voices, spaces, and experiences that might otherwise be overlooked or dismissed by migrants themselves as "not representing" an imagined, "normal" migration experience' (2016, p. 231). Indeed, his empirical findings suggest that by looking exclusively to participants' mental maps, conclusions would easily tend to reiterate traditional narratives of migrant marginalization and spatial exclusion; whereas the recourse to walking interviews and to photographs taken by participants helped unsettling such narratives and locate migrants into much finer descriptions of spatial experience beyond pre-prescribed migration research categories (Carling, Bivand, & Ezzati, 2014).

The examples provided above expose three ways of operating mental maps in migration research. As a research method, mental maps are versatile; yet, the usage we make of them necessarily entails a set of assumptions regarding the nature of spatial experience and the kind of representation mental maps are able to portray. The research project I discuss in the next section departs from a non-naturalistic understanding of mental maps, by which they are seen not as a straightforward register of a given spatial state of affairs, but as "an imaginative effort produced under the needs of the moment" (Tuan, 1975, p. 209), that is, under the researcher-participant engagement. Framed within this context, mental maps acquire, as I attempt to demonstrate, an *interactive* capacity allowing researchers *and* participants to discuss and overcome the very limitations of cognitive mapping, and to construct more complex depictions of participants' spatialities.

3.3 Unpacking Migrants' Practical Knowledges: Mental Maps and Urban Integration

The material that follows is part of a wider, European Commission-funded research project that I conducted in Lisbon, Portugal, regarding migrants' use of space and urban integration. The project addressed the relationship between migrants and their urban surroundings, which involves not only the city's built environment, its locations and morphologies, but also the complex system of practical knowledge and skills employed by inhabitants in order to cover distances, use spaces and comply with all sorts of life requirements. Fieldwork was carried out in 2015 and 2016, and the conversations with participants provided below were conducted in Portuguese.

The project revolved around the idea that cities are complex networks of resources that require knowledge for being used (Buhr, 2018a); they are "constantly sought to be learnt and relearnt by different people and for often very different reasons" (McFarlane, 2011, p. 362). Yet, learning how to use a city does not happen from one day to the other, nor does it result from internalizing a compendium of ready-made urban information: urban apprenticeship takes time and comes about as city dwellers interact with urban space in order to comply with the practicalities of everyday life. Migrants, nevertheless, face the challenge of learning how to attend to those everyday needs in a new environment together with the urgency for settlement, finding work, services, leisure and making personal connections (Buhr & McGarrigle, 2017). Migrants' urban practical knowledges become, therefore, a privileged standpoint from which to understand their connections to urban resources and the kinds of urban experience available to them.

José[1] (40s) landed in Portugal in 2004 coming from Guinea-Bissau, a former Portuguese colony in West Africa. We talked about his first months in Lisbon and about how he used to get around in the city. By then, smartphones were not common and people did not have mobile internet networks the way they have now. So I asked if he used to carry a map of the city, to what he replied:

> 'we in Africa don't have this habit [of using maps], this is Europeans' stuff. Since our cities are totally different, we never walk around with maps there. In Lisbon, I kept on doing what I did before: whenever I didn't know how to get to places, I'd ask around'.

During our talk, though, José was proud to say that "things have changed" and to share that his friends nicknamed him "GPS": "It is *me* they turn to when they need instructions now". This sense of practical mastery, of being able to *work* the city for any given purpose, has rarely been advanced in migrant integration research, despite its evident relationship with migrants' urban well-being. Spatial confidence, that is, the feeling one knows one's surroundings and is able to navigate them autonomously, bears a rich research potential as it reveals how familiarity with urban space is constructed, dynamic and results from embodied spatial practice. He insisted: "and I am this come-and-go kind of person, so I know Lisbon pretty well; actually,

[1] Participants' names have been changed.

not only Lisbon, I'd say the whole metropolitan area". And yet, when asked to draw a map of the spaces he used on a daily basis, José hesitated for a while saying he had "never been good with maps'. Once I explained that there was no correct way of drawing, and that geographical scale and accuracy were not important, he accepted the challenge (see Fig. 3.1).

His hesitation to take on the mapping task was not unprecedented; other participants also seemed reluctant with the "map" reference and with what it entails. The authoritative knowledge of the map-form suggests that "the objective of mapping is to produce a "correct" relational model of the terrain" (Harley, 2011, p. 277), a task participants, understandingly, do not feel they can embark for. In response, I changed my approach to participants, asking them to *draw*, rather than to *map*. Just like the Uber driver from the beginning of the chapter believed not to know the city without a navigation app, participants' unease with cartographical knowledge of the city seems to indicate that knowing a city – that is, being able to navigate it and use its resources – does not necessarily translate into being able to represent it with the tools of cartographical tradition (Scott, 1998).

José's mental map was, by far, the most "zoomed out" of all my participants' maps. Figure 3.1 shows both José's drawing and a cartographical map of Lisbon's metropolitan area in order to stress the scale of his representation. The map gives important clues about his widened use of space. Lisbon itself is only a part of his drawing (the area represented in blue), and the suburbs appear side by side, but they do not orbit around Lisbon; instead they are arranged sequentially and along train line locations (orange part). Impressed with the scale of his map, I asked José to tell me how he got to know all those places, to what he replied: "you know, I worked for a while as a receptionist in a hotel, with tourism, and I answered to all sorts of questions about Lisbon'. However, tourism information does not usually refer to the specific suburbs he chose to portray (which are more affordable districts, usually

Fig. 3.1 José's mental map

with large social housing projects). It was only when I asked him to tell me what he thought of the public transport system in Lisbon that he corrected me and said

> 'there is not *one* public transport system here; there are two, one for the city centre and one for the peripheries. The waiting times for buses are quite different from one to the other, and there are more options in the centre, like trams [which do not exist in the suburbs]. There are places in the outskirts where you have to wait more than 30 minutes for a bus! I normally don't wait that long; if it says 20 minutes [in the digital real-time information display] I plan another route, take another bus, walk … But there are places where you have no other way but to wait because the alternatives are even worse'.

José's familiarity with such a large-scale portion of Lisbon's metropolitan area owes a great deal to the fact that he lives and has lived before in some of these suburban districts, where most of his acquaintances are still based. His daily need to commute – in search of work, for instance, during the time we had our conversation – required him to navigate significantly large distances and to rely on his knowledge of public transport options. Being aware of what his transport options are and of which ones are *preferable* testify to how his urban know-how cannot be divorced from his particular need to commute, his embodied spatial practices, and his current need to attend to different recruitment interview locations throughout Lisbon's metropolitan area. More than that, they hint to his constructed abilities to circumvent or mitigate some of the effects of an unequal public transit structure (centre *versus* peripheral areas) by resorting to his urban know-how (Buhr, 2018b).

While José's mental map gave me more or less clear directions on how to proceed with our conversation, Gabriela's drawing was much more opaque. Coming from the south of Brazil, Gabriela (30s) arrived in Portugal in 2002 and began working as a caretaker and house cleaner. At the time we met, Gabriela had multiple jobs as a cleaner, working at people's homes and at local shops. Like José, Gabriela also lives in a more affordable suburban area where she has easy access to a train line, bringing her everyday to the city centre. Due to the number of places she works at and to their non-contiguous locations, Gabriela needs to spend many hours per week in public transport. She recalls, laughing, how confusing it was for her to navigate the networks of public transit in Lisbon right after she moved here. "I come from a small town in Brazil, with less than 10,000 inhabitants. There's no public transport there. (…) During my first months in Lisbon, I got lost so many times using the metro!"

Knowing the length of her stay in Portugal and her need to go about Lisbon, the mental map she drew (Fig. 3.2) turned out to be very intriguing. She began by drawing her home (in pink); an arrow (in yellow) marking her trajectory toward the metro station; then "Campo Pequeno" which is both a metro station and the place where a bus going to the beach passes by; a road, the bridge, the Tagus river; and across the river, "Costa da Caparica", a beach town. Although I had asked her to draw the spaces she frequents on a daily basis, she opted to show me a sketch of her trips to the beach.

In Gabriela's mental map, Lisbon is almost absent. Her map was telling me (or *not* telling me) something that our conversation was not. If I were to undertake a formal analysis of this apparent emptiness or inaccuracy, literature would possibly

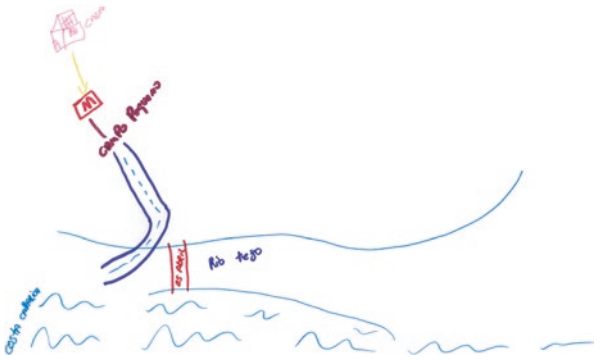

Fig. 3.2 Gabriela's mental map

suggest that people have limited ability to draw map-like images, or that such "incompleteness" could result from participants' limited socio-spatial experience of that particular area (Fenster, 2009, p. 479). A blank space could, thus, be seen as a marker of spatial exclusion, of segregation, of danger or hostility. Yet, something seemed odd in that map given Gabriela's spatial routine. Looking at her map, I asked Gabriela: "do you feel like you know Lisbon?', and her answer could not have been more explicative:

> 'Yes, where do you want to go? You can ask me anything: *metro stations*, places, shops, where you can buy this or that, where it's cheaper, where they have sales; I know everything around here. (…) If you don't want to walk that much, you can buy whatever you want at the shops *in* the metro stations, you can find everything there: clothes, bags, towels, pajamas, linen, everything. I only go to these shops, they are so practical'.

Gabriela does master Lisbon, a *subterranean* Lisbon that is convenient for someone who is always in transit – and that, too, is difficult to pin down. Getting to know Lisbon was predicated on her need to do groceries and buy whatever her family needs at the shops she passes by as a train and metro user – shops that are usually open until later hours. Her urban knowledge allows her to unearth the city's potentialities in order to respond to her daily needs. The potency of her narrative is not subsumed to a quantification of the places she needs to go to, or the amount of time she spends in transport, but pertains rather to her ability to extract what she needs from her known surroundings.

Abilities, know-how, and skills cannot be measured. And yet, they provide us with crucial data regarding the ways migrants and other urban dwellers actively engage with the urban and circumvent its constraints. The two mental maps presented here functioned less as a finished object and more as a live, moving image, in which spatial depictions were connected to storylines by means of the researcher-participant interaction. As we have seen, when explored through participants' narratives, mental maps do allow for skills and inhabitants' know-how to come up. And skills are compressed knowledge about the world and about how to live in it (Ingold, 2000; Knowles, 2010) and just as they say something about individual urbanites and

their embodied production of knowledge, they also say something about the city itself – its fractures, its structures, its inequalities and distributions.

The examples above make a case for research to examine the micro-scale of migrants' spatial usage in order to identify how practices correspond to varied distributions of spatial resources among individuals. Sketch mapping can provide powerful descriptions of the ways migrants operate with the constraints and possibilities offered by urban space. This has been taken forward in very inspiring ways by Fawaz, Salamé, and Serhan (2018), for instance, in a research project with Syrian refugees in Lebanon working in the delivery business, driving scooters transporting pizzas, sandwiches, chicken and meals in general. Methodologically, the visualisations produced in their project demonstrate how individuals' aptitudes at practising the city may be aggregated and help unsettling common beliefs that refugees' whereabouts are limited to very specific and circumscribed areas of the city. Yet, they show how the access to the city as a whole is negotiated and takes place in face of severe constraints.

By looking at the "mechanics" of migrants' urban navigation it is possible not only to uncover the practical knowledges which often slip through the techniques of quantitative research, but also to understand the ways in which migrants do manage urban lives, in face of their relative privileges or disadvantages.

3.4 Mental Maps as Holograms

This chapter began with a reference to two interrelated ways of knowing a city. On the one side, the kind of knowledge that a cartographic map is able to bring forth: a city's form, its streets and names, the trajectories and routes it allows to take place, its official limits and demarcations. On the other side, a practical knowledge, an urban know-how shaping inhabitants' access to and use of space: an *un-mappable* expertise constructed through embodied engagement with urban space. These two ways of knowing a city, rather than conflicting, are actually complementary and simultaneously invoked in the process of urban navigation (Istomin & Dwyer, 2009, p. 41).

The examples provided by existing research findings signal to the potentialities and the limitations of mental maps in exposing the ways city inhabitants, in general, and migrants, in particular, know and use urban space. Nevertheless, they differ as to the ways participants' mental maps are read and operationalised. A close reading of mental maps privileges a formal analysis of the elements represented and of their accuracy and relevance; it distinguishes elementary maps from more complex ones based on the level of details exposed, the number of reference points perceived, and the structure of urban objects indicated. In a formal analysis, mental maps become sufficient research data; they stand on their own – or in comparison with cartographic maps.

Another strategy for reading mental maps departs from the recognition that acts of mapping are, as Cosgrove (1999, p. 2) states, "creative, sometimes anxious,

moments in coming to knowledge of the world, and the map is both the spatial embodiment of knowledge and a stimulus to further cognitive engagements". His argument invites us to look at maps as coded forms of knowledge transmission, but also to go beyond the map-form, exposing the creative processes that both shaped and enabled its existence. Such reading of mental maps does not reject maps' formal elements; instead, it looks at them as the result of an authorial representational gesture, which is limited by individuals' drawing abilities, but also charged with their personal take on space. As Tazzioli argues (2015, p. 2), besides the level of detail and the number of urban elements depicted, it also matters to look at what *inevitably falls out of the map*, including inhabitants' practical knowledges.

Yet, looking beyond the map is not arbitrary; as we have seen, looking for inhabitants' practical knowledges depends on a researcher-participant dialogue in which the mental map becomes a topic for discussion and clarification. In practical terms, this dialogue resembles the technique of photo elicitation (Harper, 2002), yet it differs from it in that what is discussed is actually produced on the spot by participants themselves, and that discussion may occur during the process of drawing. As Fenster (2009) has argued, this dialogue builds up trust and confidence between researcher and participant over the meanings of the drawing and bears the capacity to re-embed the map into individuals' narratives.

These two ways of operationalising mental maps are intimately related to the two ways of knowing a city we referred to earlier. If we are interested in measuring one's cartographical knowledge, their storage of spatial data and the ways that urban information is remembered and organised in a representational manner, than a formal evaluation of mental maps would do the job. An increment in one's capacity to navigate a given space, following this line of thought, means to be able to know more (Ingold, 2011) – to represent more items, to depict a greater number of spatial elements accurately and bearing resemblance with cartographic representations. Operating mental maps in such a way allows researchers to measure, to count, and to contrast participants' drawings with a reference model.

Alternatively, if we aim at understanding one's personal take on space, their own ways of using space and the messy, yet functional manner through which inhabitants navigate and connect urban resources, then to extrapolate the formality of mental maps is fundamental. In such a frame, an increment in one's capacity to navigate a given space means not to know more, but *to know it well*. And "knowing well" is fundamentally personal, embodied, changeable and unquantifiable. It relates to one's daily spatial needs, their capacities, and with how one interacts with the structural constraints and opportunities present in a given (urban) environment.

The examples provided from my own research project expose a couple of migrants' spatialities in Lisbon with and beyond the map form. Participants' common assumption that a map has no room for their idiosyncrasies is turned on its head as they realise, through dialogue, that their idiosyncrasies are just as meaningful (if not more) as the formal elements they choose to depict. However, establishing such dialogue is not only a way to mitigate participants' unease with the authoritative charge the term "map" inevitably brings about. My argument is that mental maps

may reveal their full potentialities as a research method *only when their interactive capacities are explored*.

Take José's and Gabriela's mental maps for instance. By drawing a zoom-out representation of Lisbon's metropolitan area (José) and by keeping Lisbon as a blank space (Gabriela), participants' maps prompted narratives that would hardly surface otherwise. As Gieseking argued, "the most exciting insight that mental mapping affords social science research is another way of literally seeing and hearing participants' experiences that may go unrecorded if the studies of space and place rely solely on verbal interchange' (2013, p. 722). It was precisely *because* of the elements they chose to represent that our conversations took that particular direction. This is not the same as arguing that research-participant interaction, through the shape of a dialogue, is a fruitful additional method complementing mental maps, nor am I claiming that mental maps function as an illustration for participants' storytelling. I would like to suggest that the strength of mental maps as a research method is that narratives are latent in them, and that not making narratives emerge is to fall short of mental maps' potentialities.

Let me try to make my argument clearer by resorting to an analogy of mental maps as holograms. Like holograms, mental maps are imprinted on a surface that, when looked at from the front, reveal one (but only one) dimension they contain. However, by looking at a hologram from different angles, the viewed picture changes, showing depth where there was only a flat, one-dimensional image. Mental maps also contain more dimensions than what the actual formality of the drawing is able to expose. Yet, for mental maps' depth to come up, an interactive engagement between participant and researcher needs to take place. The word hologram comes from the Greek *holos*, "whole", and *gram*, "that which is drawn". A hologram means, literally, the whole picture. In this sense, excavating the mental map not only provides a more thorough description of its elements, but also re-embeds the map into the context of embodied spatial practice that made it possible in the first place. In other words, through researcher-participant engagement, mental maps yield not simply more information, but rather a different kind of information (Harper, 2002).

To unfold mental maps in such a way allows researchers to work with the method's full potentiality. Moreover, it makes room for a less abstracted analysis of participants' relationships with urban space. Latour once wrote that "most of what we call "abstraction" is in practice the belief that a written inscription must be believed more than any contrary indications from the senses" (1990, p. 51). By disclosing the narratives contained in mental maps, we allow for a more complex depiction of spatial practices to come about, one that is much less a projected line on a one-dimensional surface than the experience of a journey made, "a bodily movement from one place to the other" (Ingold, 1993, p. 154). Such perspective is not one that rejects the cartographic bird's eye-view, but one that embodies an ongoing relationship between a readable, coded city and the many uses to which it is put, the ways its spaces are lived, practiced, and experienced (de Certeau, 1984; Ingold, 1993).

Mental maps do not exhaust themselves in a formal analysis. Just as with holograms, sticking only to their face-value is to underutilise their full potentialities. Used in combination with other research methods or alone, mental maps magnify their potency in conveying information on human-space interaction when taken as an interactive methodology, in which the researcher-participant rapport is as fundamental as the actual visualisation produced. Mental maps are not once-and-for-all descriptions of inhabitants' spatialities; they are fragile achievements, condensing both personal and urban dynamics. Excavating them is a way to bring spatial practice under scrutiny, the very practices that make mental maps a tangible construction.

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